Manitoba
Agriculture

formation Update

Guidelines For Estimating
White Pea (Navy) Bean
Production Costs

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This guide is designed to provide you with planning information and a format for calculating the cost of production for a white pea (navy) bean enterprise for both row crop and solid seeded production. The summary on page 3 contains the total cost of production for both row and solid seeded crops. The assumptions and details following for each type of system are separated into row and solid seeded crop sections.

The cash cost inputs associated with growing a crop in Manitoba are substantial. It is extremely important for farm managers to do detailed calculations to select the optimum crop combination that will maximize profits. Detailed planning is also necessary when estimating the amount of operating credit required to finance the inputs.

To estimate a cash flow budget the actual payments on principal and interest may be substituted for the fixed costs. As well, an estimate can be made to cover family living expenses, funds required for capital purchases and cost adjustments made for other enterprises on the farm.

Producers are encouraged to calculate their own costs of production. Each farm, costs and yields differ due to soil type, climatic conditions, and agronomic practices.

Industry Summary

Edible beans is a general term used to describe several bean market classes that include white pea (navy), pinto, black, light red kidney, cranberry and great northern beans. Edible bean production in Manitoba has grown from 60,000 acres in 1996 to over 240,000 acres in 2000. Wheat pea (navy) beans are the most common type accounting for over 60% of the total acres.

Traditionally white pea (navy) beans are grown as a **row crop** in 36 or 30 inch rows. Under this system weeds are managed through a combination of cultivation and herbicides. Harvest system consists of cutting the bean stems below the ground with a knife, putting them in a swath to dry and windrowing the swaths before combining.

New growers are looking at growing beans in row widths from 8 to 21 inches. This practice is often referred to as **solid seeded** or narrow row production and accounts for approximately 30% of the edible acreage in Manitoba. Solid seeded bean production relies on herbicides for weed control and requires upright varieties that lend themselves to direct combining or swathing.

White Pea (Navy) Bean - Cost of Production Summary

	Row Crop		Solid Seed		
A. Operating Costs	**$/acre**	**$/lb**	**$/acre**	**$/lb**	**Your Cost**
1.01 Seed	$27.00	$0.0159	$40.80	$0.0272	
1.02 Fertilizer	$24.20	$0.0142	$24.20	$0.0161	
1.03 Chemicals	$59.00	$0.0347	$86.00	$0.0573	
1.04 Insecticide/Fungicide	$29.00	$0.0171	$29.00	$0.0193	
1.05 Fuel Costs	$13.81	$0.0081	$10.38	$0.0069	
1.06 Repair & Maintenance	$9.60	$0.0056	$8.00	$0.0053	
1.07 Insurance	$11.20	$0.0066	$11.20	$0.0075	
1.08 Miscellaneous	$8.00	$0.0047	$8.00	$0.0053	
1.09 Land Taxes	$6.50	$0.0038	$6.00	$0.0040	
Subtotal Operating	$188.31	$0.1108	$223.58	$0.1491	
1.10 Interest on Operating	$8.24	$0.0048	$9.78	$0.0065	
Total Operating Costs	**$196.55**	**$0.1156**	**$233.36**	**$0.1556**	
B. Fixed Costs					
2. Depreciation					
2.01 Machinery	$24.00	$0.0141	$20.00	$0.0133	
2.02 Storage	$1.90	$0.0011	$1.90	$0.0013	
3. Investment					
3.01 Land	$35.00	$0.0206	$25.00	$0.0167	
3.02 Machinery	$12.00	$0.0071	$10.00	$0.0067	
3.03 Storage	$1.05	$0.0006	$1.05	$0.0007	
Total Fixed Costs	**$73.95**	**$0.0435**	**$57.95**	**$0.0386**	
C. Labour	**$15.00**	**$0.0088**	**$15.00**	**$0.0100**	
Total Cost of Production	**$285.50**	**$0.1680**	**$306.31**	**$0.2043**	
Estimated Yield per acre	**1,700 lbs**		**1,500 lbs**		

White Pea (Navy) Bean Cost of Production Worksheet
Row Crop Assumptions

1. This budget provides a guideline to determine the cost of production for a row crop white pea (navy) bean enterprise.

2. The investment in machinery and equipment was assumed to be $240 per acre. The machinery complement is similar to a grain enterprise with the addition of a row crop planter, row crop cultivator, row crop sprayer and a bean windrower.

3. A yield of 1700 per acre was assumed.

4. A land value of $700 per acre was assumed.

A. Operating Costs				Your Cost
1.01 Seed				
		100,000	plants/acre	
	÷	2600	seeds/lb	
	x	1.17	emergence factor	
	=	45	seeding rate lbs/acre	
	x	$0.60	seed cost ($/lb)	
	=	**$27.00**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		40	lbs/acre	
	x	$0.270	cost/lb	
	=	$10.80	$ /acre	
P_2O_5		30	lbs/acre	
	x	$0.280	cost/lb	
	=	$8.40	$ /acre	

K_2O		20	lbs/acre	
	x	$0.135	cost/lb	
	=	$2.70	$ /acre	
Sulfur		10	lbs/acre	
	x	$0.230	cost/lb	
	=	$2.30	$ /acre	
Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**24.20**	**$ /acre**	

1.03 Chemicals

	$18.00	pre plant incorporated	
+	$8.50	post emergent	
+	$18.50	post emergent	
+	$14.00	desiccant	
=	**$59.00**	**$ /acre**	

1.04 Insecticide/Fungicide

	1	number of applications	
x	$4.00	cost/application	
+	$25.00	fungicide	
=	**$29.00**	**$ /acre**	

1.05 Fuel Costs

a) Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Cultivate	1	48	5	0.77	
Spray	1	90	7	0.29	
Cultivate	2	48	5	1.54	
Plant	1	24	6	1.28	
Cultivate	2	24	6	2.56	
Spray	2	90	7	0.59	
Puller	1	12	7	2.19	
Combine	1	24	3.5	2.19	
Total				**$11.41**	

b) Truck Fuel Costs from field to storage

	1700	lbs/acre gross yield	
=	340	total tons	
÷	5	tons (truck capacity)	
=	68	trips	
x	5	miles per trip	
=	340	total miles	
÷	2.0	fuel consumption (miles/gal)	
=	773	total litres (4.546 litres/gal)	
÷	400	total acres	
=	1.93	litres/acre	
x	$0.52	fuel cost ($/litre)	
Total =	**$1.00**	**trucking ($ /acre)**	
Other fuel costs =	**$1.40**	**$ /acre**	
Total fuel costs =	**$13.81**	**$ /acre**	

1.06 Repair & Maintenance

	4.0%	percentage rate	_____
x	$240	investment/acre	_____
=	**$9.60**	**$ /acre**	_____

1.07 Insurance

	$8.50	crop insurance	_____
+	$2.70	hail insurance	
=	**$11.20**	**$ /acre**	

1.08 Miscellaneous

=	**$8.00**	**$ /acre**	_____

1.09 Land Taxes

=	**$6.50**	**$ /acre**	_____

1.10 Interest on Operating

	$188.31	Subtotal Operating	_____
÷	2	average	_____
x	8.75%	interest rate	_____
=	**$8.24**	**$ /acre**	_____

B. Fixed Costs

2. Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

2.01 Machinery

	$240.00	cost/acre	_____
-	$0.00	salvage value	_____
÷	10	useful life	_____
=	**$24.00**	**$ /acre**	_____

2.02 Storage

	$40.00	cost/acre	_____
-	$2.00	salvage value	_____
÷	20	useful life	_____
=	**$1.90**	**$ /acre**	_____

3. Investment

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

3.01 Land

	$700.00	cost/acre	_____
x	5.0%	% investment rate	_____
=	**$35.00**	**$ /acre**	_____

3.02 Machinery

	$240.00	cost/acre	_____
+	$0.00	salvage value	_____
x	5.0%	% investment rate	_____
=	**$12.00**	**$ /acre**	_____

3.03 Storage

	$40.00	cost/acre	_____
+	$2.00	salvage value	_____
÷	2	average	_____
x	5.0%	% investment rate	_____
=	**$1.05**	**$ /acre**	_____

C. Labour

	$10.00	$/hour	_____
x	1.5	hours/acre	_____
=	**$15.00**	**$ /acre**	_____

White Pea (Navy) Bean Cost of Production Worksheet
Solid Seed Assumptions

1. This budget provides a guideline to determine the cost of production for a solid seeded crop white pea (navy) bean enterprise.

2. The investment in machinery and equipment was assumed to be $200 per acre. The machinery complement is similar to a grain enterprise with the addition of a flex header.

3. A yield of 1500 pounds per acre was assumed.
This is slightly lower than the yield for row crop production to reflect the fact that much of the acreage lies outside the traditional bean production area.

4. A land value of $500 per acre was assumed.

A. Operating Costs				**Your Cost**
1.01 Seed				
		150,000	plants/acre	
	÷	2600	seeds/lb	
	x	1.17	emergence factor	
	=	68	seeding rate lbs/acre	
	x	$0.60	seed cost ($/lb)	
	=	**$40.80**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		40	lbs/acre	
	x	$0.270	cost/lb	
	=	$10.80	$ /acre	
P_2O_5		30	lbs/acre	
	x	$0.280	cost/lb	
	=	$8.40	$ /acre	

K_2O		20	lbs/acre	
	x	$0.135	cost/lb	
	=	$2.70	$ /acre	
Sulfur		10	lbs/acre	
	x	$0.230	cost/lb	
	=	$2.30	$ /acre	
Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**24.20**	**$ /acre**	

1.03 Chemicals

	$18.00	pre plant incorporated	
+	$17.00	post emergent	
+	$37.00	post emergent	
+	$14.00	desiccant	
=	**$86.00**	**$ /acre**	

1.04 Insecticide/Fungicide

	1	number of applications	
x	$4.00	cost/application	
+	$25.00	fungicide	
=	**$29.00**	**$ /acre**	

1.05 Fuel Costs

a) Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Cultivate	1	48	5	0.77	
Spray	1	90	7	0.29	
Cultivate	2	48	5	1.54	
Plant	1	24	6	1.28	
Spray	2	90	7	0.59	
Swath	1	24	4.5	1.71	
Combine	1	24	4	1.92	
Total				**$8.09**	

b) Truck Fuel Costs from field to storage

	1,500	lbs/acre gross yield	
=	300	total tons	
÷	5	tons (truck capacity)	
=	60	trips	
x	5	miles per trip	
=	300	total miles	
÷	2.0	fuel consumption (miles/gal)	
=	150	total required fuel (gal)	
÷	400	total acres	
=	1.70	litres/acre (4.546 litres/gal)	
x	$0.52	fuel cost ($/litre)	
Total =	**$0.89**	**trucking ($ /acre)**	
Other fuel costs	**$1.40**	**$ /acre**	
Total =	**$10.38**	**fuel costs ($ /acre)**	

1.06 Repair & Maintenance

	4.0%	percentage rate
x	$200	investment/acre
=	**$8.00**	**$ /acre**

1.07 Insurance

	$8.50	crop insurance
+	$2.70	hail insurance
=	**$11.20**	**$ /acre**

1.08 Miscellaneous

=	**$8.00**	**$ /acre**

1.09 Land Taxes

=	**$6.00**	**$ /acre**

1.10 Interest on Operating

	$223.58	Subtotal Operating
÷	2	average
x	8.75%	interest rate
=	**$9.78**	**$ /acre**

B. Fixed Costs

2. Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

2.01 Machinery

	$200.00	cost/acre	_____
-	$0.00	salvage value	_____
÷	10	useful life	_____
=	**$20.00**	**$ /acre**	_____

2.02 Storage

	$40.00	cost/acre	_____
-	$2.00	salvage value	_____
÷	20	useful life	_____
=	**$1.90**	**$ /acre**	_____

3. Investment

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

3.01 Land

	$500.00	cost/acre	_____
x	5.0%	% investment rate	_____
=	**$25.00**	**$ /acre**	_____

3.02 Machinery

	$200.00	cost/acre	_____
+	$0.00	salvage value	_____
x	5.0%	% investment rate	_____
=	**$10.00**	**$ /acre**	_____

3.03 Storage

	$40.00	cost/acre	_____
+	$2.00	salvage value	_____
÷	2	average	_____
x	5.0%	% investment rate	_____
=	**$1.05**	**$ /acre**	_____

C. Labour

	$10.00	$/hour	_____
x	1.5	hours/acre	_____
=	**$15.00**	**$ /acre**	_____

For further information contact your Manitoba Agriculture and Food office.

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